

# EXHIBIT C



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1-13416 #8

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# IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:  
Pavel Mayer et al.

Examiner: P. Nguyen

Filed: December 17, 1996  
Serial No.: 08/767,829

Group Art Unit 2772

For: METHOD AND DEVICE FOR  
PICTORIAL REPRESENTATION  
OF SPACE-RELATED DATA

Attorney Docket 1-13416

May 7, 1999

Assistant Commissioner for Patents  
Washington, D.C. 20231

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## AMENDMENT

Honorable Sir:

Responsive to the outstanding Examiner's Action dated February 11, 1999, applicants have carefully studied the references cited by the Examiner and the Examiner's comments relative thereto. Favorable reconsideration of this application is respectfully requested in light of the following detailed discussion.

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On page two of the Office Action, the Examiner correctly presumes “that the subject matter of the various claims was commonly owned at the time any invention covered therein were made . . . .” The Examiner’s presumption is correct even though the application currently names joint inventors. Therefore, applicants respectfully request the Examiner to evaluate the application on the grounds that the various claims were commonly owned at the time the invention was made.

Also, on page two of the Office Action, the Examiner has listed the patent number of Iwamura et al as “5,602,566.” Applicants are assuming that the Examiner intended to list the Iwamura et al patent number as 5,602,564 since 5,602,566 pertains to a different inventor and completely different subject matter.

The Examiner has rejected claims 1-37 under 35 U.S.C. 103(a) as being unpatentable over Shimada (4,847,788) in view of Iwamura et al (5,602,564). In the Office Action, the Examiner provided specific reasons for rejecting claims 35-37. The specific points of the Examiner’s rejection of claims 35-37 are addressed first below. The Examiner’s rejection of claims 1-34 “[d]ue to [their] similarity . . . to claims 35-37. . . under a similar reason” is addressed secondly. It is respectfully submitted that applicants invention, as defined in claims 1-37, as previously amended, exhibits novelty over Shimada in view of Iwamura.

Regarding claim 35, the Examiner stated Shimada teaches the “‘method of pictorial representation of space related data’ comprising: ‘input medium (Shimada, figure 2); a plurality of spatially distributed data sources (Shimada, figure 1); and one device for determining the representation (Shimada, figure 23).’” The Examiner noted that although

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Shimada does not explicitly teach 'selectable direction of view' as claimed . . . 'direction of view' is a well known factor for displaying the retrieved object (Iwamura, figure 23). Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Iwamura, to configure Shimada's system as claimed.

It is respectfully submitted that applicants invention, as defined in claims 35-37, as previously amended, exhibits novelty over Shimada in view of Iwamura.

The Examiner references Shimada, figure 2 for the assertion that it teaches the claimed "input medium" of claim 35. Shimada's specification at column 3, lines 9-15 describing figure 2 states, "204 denotes a keyboard, numerals 205 and 206 denote, respectively, a tablet and a stylus for designating locations subjected to editing, and a numeral 207 denotes a drawing data input device for fetching the drawing or map data in terms of image data for vector analysis to derive coordinate data." Applicants specification at page 33, lines 14-20 describes the "input medium" as comprised of a "three-dimensional track ball in conjunction with a space-mouse with six degrees of freedom, in order to be able to alter both the location and direction of view of the observer. Automatic positioning-fixing systems can also be considered as further input media, such as are used in navigation aids for motor vehicles or aircraft." Applicants respectfully submit that the Examiner's comparison of Applicants input medium of claim 35 and Shimada's figure 2 is misplaced. Applicants input medium functions to enter in the location and/or the direction of view of the observer. However, the devices depicted in figure 2 of Shimada are intended for "fetching the drawing or map data . . . to derive coordinate data. Shimada is only concerned with the display of 2-dimensional geographical data, i.e. maps, without taking into account the position and view of the observer. Thus, Shimada does not teach the method of this application which is mainly concerned with organization of data with respect to an observer.



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To the contrary, Iwamura is concerned with the graphic representation of objects depending on the position and view of the observer (see fig. 2A-2C). Further, Iwamura discloses distributed memories and computers, connected via a network used to transfer data from the storage medium to remote computers for display. It further discloses the selection of view by a mouse, a glove, a head-mounted binocular display, etc.

However, Iwamura is concerned with displaying map-like 2-dimensional data and 3-dimensional object representation in the same window. For this it discloses a parallelepiped window mechanism for manipulating a virtual 3-dimensional window. Such mechanism is not mentioned or claimed in the present application.

Iwamura is completely silent on the way to store, retrieve and assemble the data. Further, Iwamura fails to mention the claimed method for handling large amounts of data.

The Examiner claimed that in a general Shimada case of 3-D display, the "direction of view" is a known factor for displaying the retrieved object (Iwamura, Fig. 23). The Examiner further stated it would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teachings of Iwamura, to configure Shimada's system as claimed.

Applicants respectfully submit that the Examiner's suggestion that the combination of Shimada and Iwamura as teaching applicants invention is misplaced. The Examiner concedes in the Office Action that Shimada fails to teach applicants claimed "selectable direction of view." There is no suggestion or incentive for the Examiner to combine the cited references. Even if proper, the combination of references does not result in the claimed invention. Obviousness cannot be established by combining the teachings of prior art to produce the claimed invention.

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absent some teaching or suggestion supporting the combination. In light of the above discussion, it would not have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teachings of Iwamura, to configure Shimada's system as claimed.

The Examiner interprets Fig. 1 of Shimada as showing a plurality of spatially distributed data sources. However, Fig. 1 discloses a plurality of spacial data, which are all stored in the single file storage unit of Fig. 2a. Figure 1 of Shimada merely shows how data are divided into pages to be stored (col. 4, lines 1-2). It does not show, either explicitly or implicitly, that the data is stored in a plurality of spatially distributed data sources like the present invention.

The present invention utilizes the spatially distributed data sources to call up, store and/or generate space-related data. The data sources include data memories and/or other data sources which call up and/or generate space-related data. This method differs from Shimada by providing the capability of a database not limited by the size of the central data memory. Therefore, the amount of available data is not limited and can be extended at will. The present invention further differs from Shimada in that the servicing and updating of the database can be effected in a distributed manner and preferably in the vicinity of the spatial area.

The Examiner has also claimed that figure 23 of Shimada teaches "one device for determining the representation." Figure 23 shows only the process of combining and dividing the pages of one map, which is completely different from the present invention. The present application is not at all concerned with the reassembly of pages or sections, it is sufficient if the pages or sections fit together when they appear at their designated location. This invention is concerned with managing a practically infinite number of data, which are stored on different computer systems connected though a network and with retrieving/transferring the minimum

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number of data necessary to provide a representation of the object with sufficient screen resolution in any part of the screen.

The difference between Shimada and the present invention is further demonstrated by Fig. 8 which depicts an explicit page list with direct access to the coordinates of the data, which with large maps, e.g. maps of the whole earth, becomes unmanageable in the central storage unit (main memory). In the present invention each part, i.e. section, of the represented data is loaded only in the topographical resolution to achieve sufficient screen detail. Thus, not all available data of a section is loaded into main memory thereby reducing the size of transmitted data and the size of the main memory without the need for any "page/section."

The Examiner rejected claims 36 and 37 arguing their subject matter is taught by Fig. 26 of Iwamura. Claims 36 and 37 each depend on claim 35, either directly or indirectly, and contain all of the limitations thereof. Therefore, claims 36 and 37 are also patentable over Shimada.

Moreover, claim 36 claims an input medium for entering the location and/or the direction of view of the virtual observer. This medium may consist of a keyboard, a graphic tablet, a space mouse, a 3-dimensional track ball, a virtual camera or a model of the object observed. In contrast, Fig. 26 of Iwamura shows a 3-dimensional window management table. The table stores the coordinate values of active windows to ensure that the most recently opened window is not overlapped by an older window (col. 17, lines 14-52). The table neither explicitly or implicitly addresses the method of entry of the location or the direction of view of the virtual observer as claim 36 teaches. Accordingly, claim 36 is patentable for this additional reason.

The Examiner similarly rejected claim 37 arguing its subject matter is also taught by Fig. 26 of Iwamura. However, Fig. 26 completely fails to mention the use of an asynchronous



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transmission protocol for the data transmission network taught by claim 37. Accordingly, claim 37 is patentable for this additional reason.

The Examiner's rejection of claims 1-34 "[d]ue to [their] similarity . . . to claims 35-37 . . . under a similar reason" will now be addressed.

Claim 1 of the applicants invention teaches a method to store, retrieve and display space related data of a selectable object with a preset image resolution. To obtain this resolution, data of the object are loaded in a basic topographical resolution and displayed. Subsequently, the field of view is divided into sections. Each section displays parts of the object with different distances from the observer. This requires that each section possess data on a different topographic scale. The individual sections are checked to ensure they each are displayed in sufficient screen resolution. If the resolution is not sufficient, data of higher topographical resolution of this section are requested, transferred and displayed. This step is repeated for ever smaller sections. The result of the repetition of the request, transfer and display of data produces the object with the required screen resolution.

Due to the amount of data required, the highest resolution of an object cannot be stored centrally. Therefore, these data are locally stored in a distributed system and only transferred upon request.

Shimada discloses a method for splitting and reassembling given maps, which are 2-dimensional geographic data, into pages. In other words, Shimada breaks down large maps into chunks for easier storage and retrieval. Shimada is not at all concerned with the screen resolution. Nor is Shimada concerned with the handling of data volumes. This fact is illustrated by Shimada's Fig. 2a which shows all data is stored in the central storage unit. Shimada also fails



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to teach the use of a network to transfer data as in the present invention. Lastly, Shimada, unlike the present invention, does not take into account the position and view of the observer. Accordingly, claim 1 is patentable for this reason.

Although Iwamura discloses the representation of objects with respect to the position and view of the observer, distributed memories and computers connected via a network, and a method to select the observer's view, Iwamura is completely silent on the way to store, retrieve and assemble the data. Accordingly, claim 1 is patentable for this additional reason.

Claims 2-34 each depend on claim 1, either directly or indirectly, and contain all of the limitations thereof. Therefore, claims 2-34 are also patentable over Shimada in view of Iwamura.

For the foregoing reasons, applicants submit that the present invention is patentable over the combined teachings of Shimada in view of Iwamura. There is no suggestion or incentive for the Examiner to combine the cited references. Even if proper, the combination of references does not result in the claimed invention. The Examiner has the burden of demonstrating that applicants claimed invention is prima facie obvious. Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. The mere fact that the prior art may be modified does not make the modification obvious unless the prior art suggested the desirability of the modification. In re Fritch, 23 U.S.P.Q.2d 1780, 1783-1784 (CAFC, 1992). Applicants respectfully submit that the present invention as defined in the claims is patentable over the teachings of Shimada in view of Iwamura.

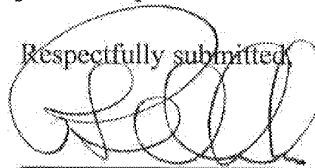
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The prior art cited, but not relied upon, by the Examiner in the rejection has been studied and is not considered to be any more pertinent than the art relied upon by the Examiner.

In view of the previous amendments to the claims and the above arguments, it is submitted that the claims of record now properly define applicants invention and distinguish the same over the prior art of record. Therefore, the application appears to be in condition for allowance. Accordingly, an early Notice of Allowance is respectfully requested.

Should the Examiner wish to modify any of the language of the claims, applicants attorney suggests a telephone interview in order to expedite the prosecution of the application.

Respectfully submitted,



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